

REMARKS

Claims 1-16 and 20-22 are pending. Claims 1-16 and 20-22 stand rejected under 35 U.S.C. § 112, ¶ 2 as being indefinite for failing to particularly point out and distinctly the subject matter which the Applicant regards as the invention. Claims 1-5, 7, and 11-16 and 20-22 stand rejected under 35 U.S.C. § 102(e) as being anticipated by over U.S. Patent No. 6,363,378 to Conklin et al. Claims 6 and 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,363,378 to Conklin et al.

Reconsideration is requested. No new matter is added. The rejections are traversed. Claims 1, 7, 10-12, 15-16, and 20 are amended. Claims 23-25 are added. Claims 1-16 and 20-25 remain in the case for consideration.

REJECTIONS UNDER 35 U.S.C. § 112, ¶ 2

With respect to the rejection that the claims are incomplete for omitting essential steps, namely the step of creating a state vector for each concept: The Applicant respectfully disagrees with the Examiner that this step is essential. First, the Applicant notes that the Examiner has cited “lines 5-19” of the specification, but failed to identify a particular page. But in any event, the Applicant does not note the specific language quoted by the Examiner in the specification at all. This language *is* found in original claim 2; but just because such language can be found in a dependent claim does not mean such language should be added to the independent claim.

In addition, the Applicant believes the Examiner is misinterpreting the significance of the state vectors. The state vectors are, in fact, dependent on the existence of the chains. As described in original claim 2, each state vector includes “measures of how concretely the concept is represented in each chain in the basis.” Thus, the existence of the chains necessarily comes before the creation of the state vectors. Exemplary independent claim 1 includes the calculation of these measures as a step of the method, but this hardly means that the creation of the state vectors is necessary for the operation of the method.

In addition, the Examiner rejected claim 12 as omitting this essential step. Claim 12 is not a method claim; adding a method step to claim 12 would be inappropriate.

With respect to the rejection that claim 3 lacks antecedent basis for the feature “each pair of concepts”: The Applicant respectfully disagrees with the Examiner that antecedent basis is lacking. Claim 1 describes the directed set as including “a plurality of concepts.” If there are at least two concepts in the set, then pairs of concepts can be formed by implication. In addition, claim 3 is not referring to a previously-identified pair; claim 3 is referring to each

and every pair of concepts already in the directed set. Therefore, no antecedent basis is needed to refer to “each pair of concepts.”

With respect to the rejection that claims 7 and 10 lack antecedent basis for the feature “directed links”: Claim 1 has been amended to explicitly describe this feature.

As all of the rejections under 35 U.S.C. § 112, ¶ 2 have been addressed or argued, the Applicant believes claims 1-16 and 20-22 are allowable under 35 U.S.C. § 112, ¶ 2.

REJECTIONS UNDER 35 U.S.C. § 102(e)

In finding the Applicant’s earlier arguments unpersuasive, the Examiner indicated that the specification did not preclude the directed set from being a tree. The Applicant agrees with the Examiner’s statement. But Conklin specifically *limits* the construct to a tree. The Applicant was simply pointing out that a reference that teaches only a tree and *cannot* be extended beyond a tree cannot anticipate a structure that is broader than a tree. Directed sets offer an attribute not available to trees generally, namely the ability to have *multiple directed paths between nodes*; a tree has exactly one path from the root to any given node. This is based on the mathematical definition of a tree: if there are any additional links between nodes, then the graph cannot be called a tree.

The Examiner also argued that the features the Applicant relied on (that there are two different paths through the directed set) is not claimed. The Applicant again argues that a directed set can necessarily include such a feature; a tree by definition cannot. Thus, Conklin is limited to a narrow teaching that *cannot* be broadened to teach the invention. In addition, new claims 23 and 25 describe this capability, by claiming a single concept that has two different paths from the maximal element (because that concept has directed links to it from two different concepts in the directed set).

The Examiner also argued that Conklin teaches chains, as claimed. The Applicant respectfully disagrees. As is clear from the specification (for example, FIG. 4), each chain consists of a set of concepts. For *each and every* pair of concepts in a given chain, one of the pair is an ancestor (e.g., parent, grandparent, great grandparent, etc.) of the other. No other relationships are described or suggested in the specification. Interpreting the term “chain” as broadly as the Examiner does is inconsistent with the specification: the Examiner is, in effect, reading material into the specification that is not there.

Because the specification did not disclose any other type of relationship between concepts in chains, the claims have been amended to clarify this point. Because the claims are interpreted in light of the specification, and because the specification did not disclose a

broader interpretation of “chain,” these amendments are not narrowing amendments. Nevertheless, these amendments should make it clear to the Examiner what is intended to be covered by the claims.

In concluding that Conklin teaches chains, the Examiner cited to several locations: column 7, lines 39-63; column 6, lines 52-64, and column 4 generally (continuing onto column 5). These sections referred variously to the knowledge base, shown on FIG. 3 of Conklin, the concept of clusters of themes and focal categories, and document theme vectors. While each of these ideas separately has a fractional relationship to the “chains” of the claimed invention, even the combination of these ideas (let alone any individual one of the ideas) meets the intended meaning of “chain.”

Conklin describes clusters as having nodes with ancestral and descendent relationships. Admittedly, Conklin does not specifically discuss other possible relationships: e.g., a sibling relationship. Nevertheless, it is clear from even a cursory examination of the figures that the nodes in Conklin’s clusters can have relationships other than ancestor-descendent. For example, nodes B and B’ are siblings: both are child nodes of node A, but have no ancestor-descendent relationship between themselves. As chains are explicitly limited to nodes having only ancestor-descendent relationships, Conklin’s clusters are a different concept.

In addition, FIG. 3 of Conklin shows two clusters, with no interconnection. The claims describe chains as stemming from “the maximal element.” Note that there is exactly one maximal element in any directed set. But knowledge base 210 does not show a single maximal element, to which all other nodes are connected. Instead, there are two “local maximal elements” (for lack of a better term) shown in FIG. 3 of Conklin: one for each cluster. Because Conklin does not teach the concept of a single maximal element, Conklin cannot teach or disclose the concept of chains as claimed.

While FIG. 6 of Conklin shows cross-references among the various clusters, FIG. 6 of Conklin still fails to teach the idea of a chain from a single maximal element to every concept in the set. FIG. 6 of Conklin still shows two “maximal” elements: Geography and Leisure and Recreation. There is no “chain” from, say, Geography to Visual Arts, or from Leisure and Recreation to Europe. Note that while a *path* exists from either Geography or Leisure and Recreation to every other concept because of the cross-references, a path is distinct from a chain, because a chain requires *directed* links.

It is worth noting that it would not be appropriate to suggest that Conklin could operate with only one cluster. Such a reading would mean that there would be a single focal

category for the entire knowledge base (see below for discussion about the problems of focal categories with reference to chains). If the knowledge base could be summarized by a single focal category, then either the focal category is so broad as to be meaningless within the implementation of Conklin or the knowledge base is so narrow as to have extremely limited utility.

Focal categories also fail to meet the definition of a chain. A focal category, as defined by Conklin, is “a concept that best reflects the center of conceptual proximity of the themes or topics in a cluster. Accordingly, the focal category or topic *is a single concept . . .*.” (column 6, lines 60-63; emphasis added). Because a focal category is a single concept, it cannot include two or more concepts, as a chain includes. The Examiner is requested to note that a chain goes from the maximal element to each concept. Since in the directed set links do not connect a node to itself, the chain necessarily includes at least two concepts, distinguishing chains from the focal category.

Finally, the Examiner said that document theme vectors, as described in column 4, anticipate the chain feature of the claims. A careful reading from column 4, line 50 through column 5, line 15, shows that document theme vectors also fail to meet the definition of a chain. Nowhere does Conklin describe that there is any relationship *at all* among the document themes in the document theme vector. Without any described relationship among the document themes, it is inappropriate to read the document theme vector as teaching a chain, where the concepts are related.

The closest thing to a relationship among the document themes in the document theme vector are the theme strengths. But this simply prioritizes the relative themes: it establishes no relationship among the themes. As claim 1 describes the directed links as defining an “is a” relationship between concepts, a “chain” is a feature not taught or suggested by Conklin. Thus, even in the instances where the directed set does not utilize the attribute that distinguishes a directed set from a tree, the claimed chain feature is not taught or suggested by Conklin.

The Applicant repeats the earlier arguments made with respect to Conklin: that Conklin teaches multiple trees for “independent ontologies,” that Conklin does not teach a basis (that is, a spanning set); and that Conklin does not teach measuring how well a concept is represented in the basis chains.

As Conklin does not teach or suggest the features of the claims, claims 1-5, 7, 11-16, and 20-25 are patentable under 35 U.S.C. § 102(e) over Conklin. Accordingly, claims 1-16 and 20-25 are allowable.

REJECTIONS UNDER 35 U.S.C. § 103(a)

The Examiner rejected claims 6 and 8-10 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,363,378 to Conklin et al. As claims 6 and 8-10 are all dependent from claim 1, which has been shown to be allowable over Conklin et al., claims 6 and 8-10 are also allowable.

In addition, the Examiner's argument about how Conklin could obviously be modified makes no sense. A focal category, as discussed above, is a single category that best represents a cluster of nodes. While Conklin might conceivably change which category in the cluster is selected as the focal category (although there is no support or suggestion for such a modification), this is still selecting a *single category* from a cluster. This still is not analogous to removing a basis chain. Again, the Examiner is requested to note that for every concept in the directed set and for every chain (and therefore every basis chain), it is possible to measure how well the concept is represented in the chain. Using FIG. 6 of Conklin as an example, assume that Europe and Visual Arts were selected as the focal categories for their respective clusters. There is no way to measure how well the concept of Western Europe is represented in the focal category of Visual Arts. Therefore, analogizing focal categories to basis chains is a nonsensical analogy.

As Conklin does not teach or suggest the features of the claims, claims 6 and 8-10 are patentable under 35 U.S.C. § 103(a) over Conklin. Accordingly, claims 6 and 8-10 are allowable.

For the foregoing reasons, reconsideration and allowance of claims 1-16 and 20-25 of the application as amended is solicited. **The Applicant requests that the Examiner to telephone the undersigned at (503) 222-3613 to schedule an interview, as it appears an interview would be helpful.**

If any questions remain, please call the undersigned.

Respectfully submitted,

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(Ariel S. Rogson)